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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

January 14, 1994

BY MESSENGER

The Hon. Reed Hundt, Chairman
Federal Communications Commission
1919 M Street, N.W., Room 814
Washington, D.C. 20554

Re: Personal Communications Services
General Docket 90-314

Dear Chairman Hundt:

When we met with you and Karen Brinkmann on December 3, 1993 to discuss personal communications services ("PCS"), you asked several questions about the ability of PCS to compete in the telecommunications marketplace and the costs of constructing and operating PCS systems. This letter responds to those questions.

We believe that your remarks at the Information Superhighway Summit in Los Angeles set the stage perfectly for the actions the Commission must take in the coming months to create a vibrant and universally accessible PCS industry:

If we do our job right in the PCS auction, we will help launch new wireless communications businesses. These businesses will create hundreds of thousands of new jobs for Americans [and] will deliver an amazing array of new services. The key to rapid growth and full deployment of PCS will be the creation of competitive markets for these portable, handheld, two-way wireless services. The guiding principle in our decisionmaking is creating access to markets.^{1/}

A necessary precondition for competitive PCS markets is sufficient scale to permit PCS licensees to compete on a level playing field with cellular and ESMR companies and, eventually, with wireline local loop telephony services.

^{1/} Information Superhighway Summit Speech, Los Angeles, California, January 11, 1994, p. 4.

We believe that PCS has the capacity to act as a catalyst in bringing competition to local markets. We applaud Vice President Gore's landmark address at Los Angeles and the efforts by the Administration and Congress to create competition and consumer choice within current monopoly telephone markets. We believe that PCS has the potential to challenge the local loop monopoly and create precisely the type of consumer empowerment and choice the Administration seeks to foster. As demonstrated on the attached chart,^{2/} which is based in part on results of our experimental research program and our construction of two working PCS systems, the cost per subscriber of constructing a PCS system is significantly lower than the cost of adding a subscriber either by copper wire or by analog wireless technologies -- the cost of adding a PCS subscriber will be approximately \$250-400, which is much lower than the cost of adding a landline subscriber by copper wire (between \$1,200 and \$2,000 per access line)^{3/} or the cost of adding a subscriber to a current analog cellular system (approximately \$1,000, although digital cellular costs will be much lower).^{4/} Although we expect that PCS systems will compete, in the first instance, in the two-way voice mobility market, the cost structure of PCS and its ground-up digital capacity will permit PCS to grow into a service that will compete with local exchange carriers for landline telephone customers.

^{2/} EMCI, Inc., Digital Cellular Economics and Competitive Technologies Report (1993) (chart used by permission). EMCI, Inc. is a telecommunications consulting firm located in Washington, D.C.

^{3/} See Huber, Kellogg & Thorne, The Geodesic Network II: 1993 Report on Competition in the Telephone Industry, p. 1.10 (1993).

^{4/} The FCC estimate of between \$500 and \$600 per subscriber is based on the study performed by David Reed of the Office of Plans and Policy in 1992. As we have discussed in prior filings, we believe that study's estimates were far too high because of the study's complete reliance on (1) utilization of fiber optic connections for all base station locations (microwave interconnection will be much more efficient) and (2) too-small base station radii, which the PCS industry no longer will implement. See Cohen, Comments on "Putting It All Together: The Cost Structure of Personal Communications Services", Gen. Docket 90-314, Jan. 8, 1993.

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The ability of PCS to compete in the local loop will depend upon how the Commission structures PCS markets. We believe that the Commission's decision to authorize two PCS licenses per market based on 30 MHz spectrum allocations and major trading area ("MTA") geographic scope will permit both effective cellular competition and effective eventual competition in the local loop. These two PCS licenses will permit the "big vision" PCS we plan to provide to be launched. We believe most strongly that if either the spectrum allocation or the geographic scope of licenses is diminished, PCS will be unable to compete with cellular and never would grow into a service that could compete in the local loop.

For PCS to be a competitive force in landline telephony, it must first gain a foothold in the existing wireless market. To do so, PCS licensees must be able to provide service throughout the regional areas that cellular licensees serve. Our research has demonstrated conclusively that consumers will not accept PCS if its geographic coverage is more limited than that available through cellular (which has overcome, at great cost and over a ten-year period, the handicap of 734 small FCC licensing areas to consolidate into large, regional clusters of supersystems). Consumers also will reject PCS service that is not seamless within licensing areas -- our engineering research has shown that allocations of 20 MHz or smaller would produce large swaths of territory where PCS could not be provided because of the presence of incumbent microwave users.^{5/} PCS licensees will face stern rejection in the marketplace if they must attempt to provide service with large "gap areas" where consumers cannot use PCS phones and data transmission devices.

Of course, even the advent of a PCS that is optimally structured to compete with cellular will not eliminate cellular's advantage in the wireless market. To the contrary, PCS will grow overall consumer interest in wireless

^{5/} Microwave incumbents cannot be involuntarily relocated for three years; if the incumbent is a public-safety licensee, moreover, it is grandfathered indefinitely and cannot be involuntarily relocated. Even voluntary relocations will require months to accomplish, during which PCS service would be impossible in territory occupied by the incumbent.

telephony and expand the market for all providers.^{6/} After the advent of PCS, cellular market share will continue to increase. Both cellular and PCS market share should be about 11-12 percent (a total penetration of 24 percent) by the year 2003. If cellular can match the lower consumer prices of PCS, cellular would achieve greater market penetration than PCS (15 percent for cellular vs. 8.6 percent for PCS, or 2.8 percent per licensee). Our research also found that additional PCS licensees beyond three does not increase the total penetration by more than a few tenths of a percentage point; the overall wireless market becomes saturated.

When PCS has gained a significant degree of consumer acceptance in the market for conventional wireless telephony, we believe it will begin to provide competition to the local loop monopoly. For PCS to compete with wireline telephony, however, PCS must provide consumers with wireline-quality voice service and wireline-capacity data transmission service. Both high-quality voice service^{7/} and high-speed, high-capacity data transmission^{8/} require a significant amount of spectrum. We believe that 30 MHz, with the possibility of consolidation to 40 MHz, is the minimum PCS allocation that

^{6/} Attached is a graphic depiction of the findings of a market-share study performed by DSS Research on behalf of APC.

^{7/} High-quality voice transmission demands high-capacity, 32 kilobit per second voice coders ("vocoders"). Vocoder rates this high cannot be accommodated in narrow spectrum allocations. A Telocator spectrum study found that 36-49 MHz of clear spectrum per licensee would be required for an "optimistic" deployment of current technology using 32 Kbps voice coding; for a "conservative" deployment of current technology, 72-97 MHz of clear spectrum per licensee would be required. See Telocator PCS Technical and Engineering Committee, Telocator Spectrum Estimates for PCS Report: An Analysis of Clear Spectrum Required to Support Emerging PCS Services, p. 3 (1992).

^{8/} Wireless computing devices -- including laptop and notebook computers as well as "personal digital assistants" -- must be served by a robust and high-quality digital transmission system. Wireless facsimile services and data modem communications will require 32 Kbps transmission; advanced computer interfaces such as wireless ISDN will require at least 64 Kbps per user.

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can support these services. Without this capability, PCS cannot hope to compete with local exchange carriers, who will soon be able to offer ISDN and, eventually, fiber optic voice and data transmission to residential and business consumers.

We appreciate your committed interest in PCS, and we agree with you that properly implementing PCS is among the most important tasks facing the Commission in the coming year. We would be pleased to answer any further questions you might have about PCS.

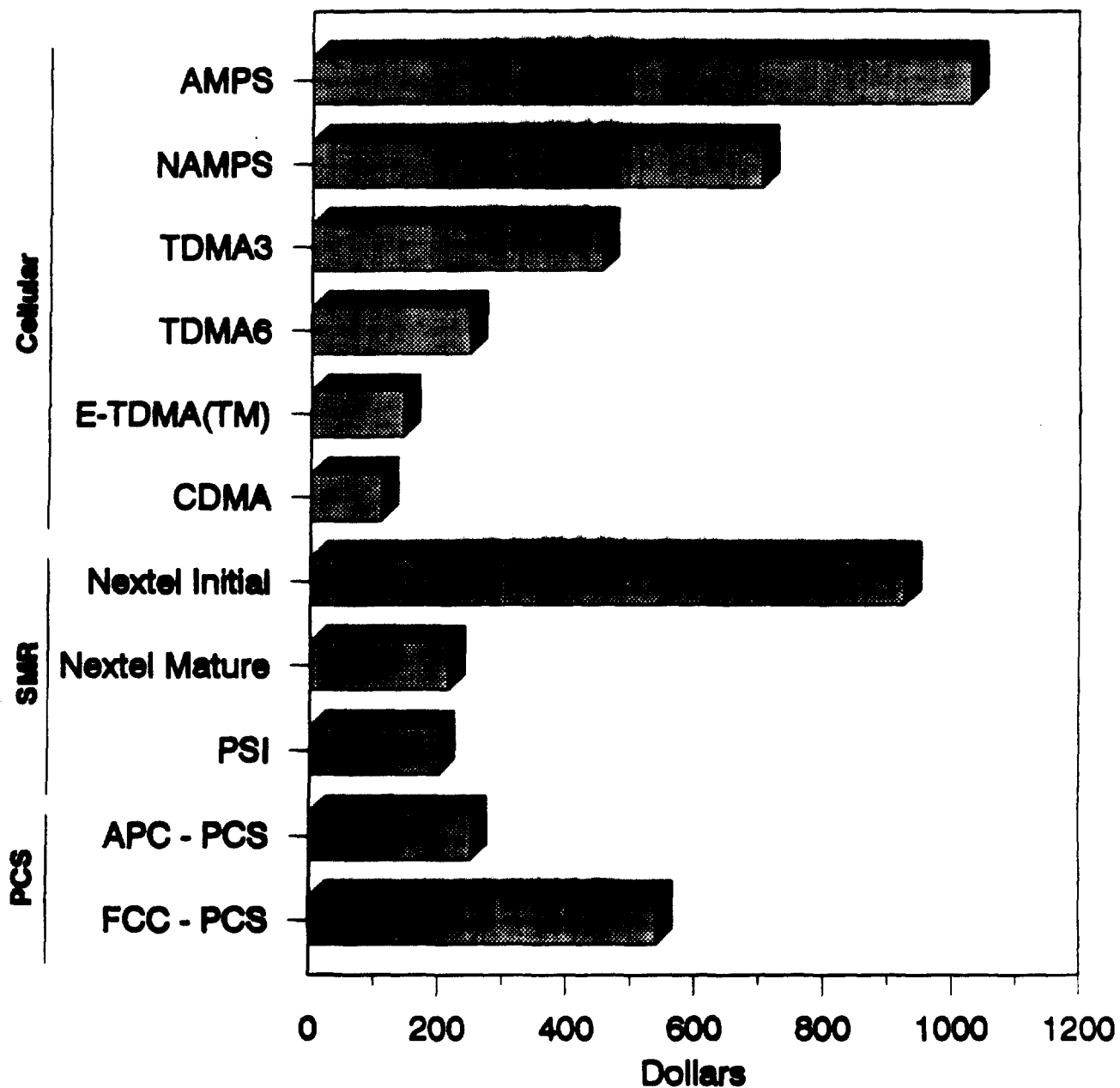
Very truly yours,

A handwritten signature in cursive script, appearing to read "Anne Phillips", followed by a small flourish or mark.

Anne V. Phillips

cc: Docket file

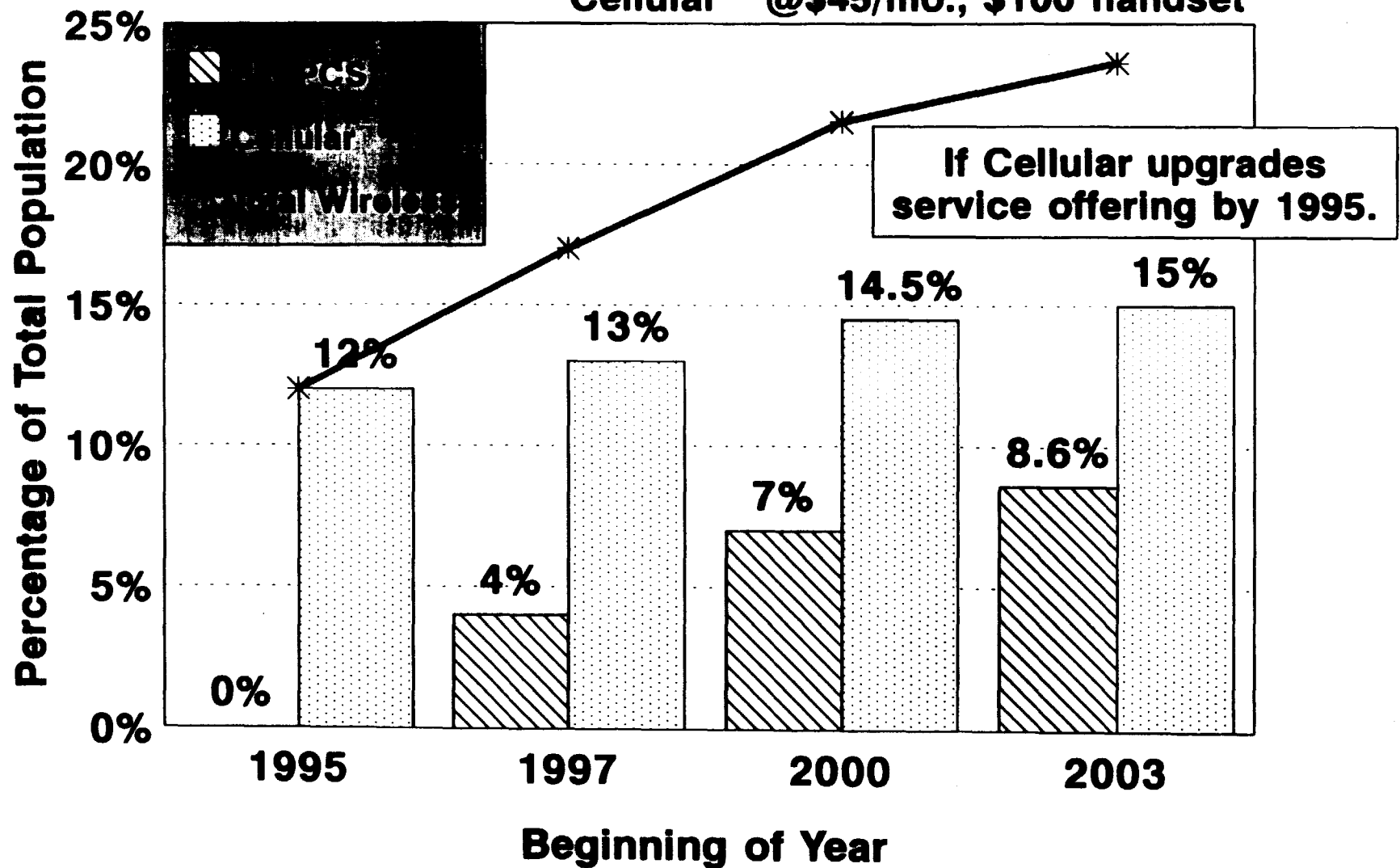
**Figure 11.5 Cost per Subscriber by Technology,
Assuming Loading at Capacity**



Source: EMCI, Inc., Lawrence Harte, APC data from APC,
FCC estimate from OPP Working Paper.

MARKET SHARE

Big PCS @\$45/mo., \$250 handset
Cellular @\$45/mo., \$100 handset



MARKET SHARE

Big PCS @\$45/mo., \$250 handset
Cellular @\$70/mo., \$100 handset

